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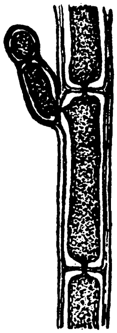
florum, H. tenuifolium, Parthenium Hysterophorus, Solanum rostratum, Monarda citriodora, and Croton capitatum. The plants were first noticed by W. J. Greene of the Ohio Experiment Station, and appeared to be growing well and spreading. The seed was evidently scattered from cars or wagons upon the return of the show at the close of the season.—AUG. D. SELBY, *Columbus, Ohio.*

Continuity of the protoplasm in the Chantransia form of Batrachospermum.—Strasburger (Botanisches Practicum, p. 403, 2nd German edition), mentions the fact of the continuity of the protoplasm between the cells of filaments of Batrachospermum. The writer's attention was attracted to this phenomenon while studying the Chantransia form of one of the species of Batrachospermum, probably Chantransia (Batrachospermum) macrospora, from Florida; and the protoplasmic connection was so evident that he thought the readers of the BOTANICAL GAZETTE might be interested in his observations.

The phenomenon was first noticed in a slide of the alga which had been mounted in glycerine jelly. In preparing the specimen for the jelly the glycerine had caused a slight shrinkage of the cell-contents, drawing it away from the cell-walls in all parts of the cells except at the ends, where fine threads of protoplasm which pierced the end walls were plainly seen to connect the shrunken masses of protoplasm in the different cells. The figure, showing this condition, was drawn from a filament on this slide with a Abbé camera, power 600 diameters, (reduced one-half).



A very sasisfactory way of demonstrating the presence of the connecting fibril is to stain the alga filaments with an alcoholic solution of eosin, wash in water, and then carefully shrink the contents of the cells with dilute glycerine. The water washes the eosin out of the cell-walls leaving the granular matter of the cells deeply stained and the connecting protoplasmic threads slightly colored. Borax carmine also gave satisfactory results. Iodine and methyl violet did not differentiate clearly enough, the cell-walls being so deeply stained as to obscure the protoplasmic connections. However, the green filaments, with the contents shrunken a little, exhibit the connecting fibril in an unmistakable way. The Chantransia form is better to demonstrate the continuity of the protoplasm than the sexual form, because the cells are as a whole much larger.—BRADLEY M. DAVIS, *Indiana University, Bloomington.*

A method of studying the growth of tubers.—After a careful examination of all the literature on tubers and tubercles at hand it appears that the application of the Baranetzky auxanometer to a study of their growth is either unknown or rarely practiced. No record of such use can be found. The writer therefore ventures to note a method of setting up the apparatus, for this purpose, which is now being employed with good results in the botanical laboratories of the University of Minnesota.

Potatoes are selected that make the tubers habitually some distance from the base of the aerial stem. The soil is removed through a separable side of the culture-box and a tuber is exposed. This is blocked up rigidly from below, in such a manner that no downward movement of the tuber can take place. A jacket made of two small square pieces of cigar-box wood is now fitted on the upper and under sides of the tuber, the lower piece resting on the block below. The pieces are held around the tuber by means of very slender rubber-bands and by small cleats on their faces which grip the tuber gently. The upper of these squares of wood is furnished with a central screw to which the thread of the tracing wheel is attached. The whole is then covered with soil and the side of the box replaced. The smoked cylinder is now brought into position, the battery and clock connected and the tracing-needle adjusted. The clock should be set to release the armature every three hours. Now, when growth takes place in the tuber, since no movement downward can ensue, the thread is released and the tracing-needle makes a vertical stroke, indicating the growth. (See Vines : Physiology p. 399; Sachs : Physiol. Eng. trans. p. 557; Pfeffer: Pflanzenphysiologie II, p. 86; Detmer : Handbuch Pflanzenphys. p. 257; Goodale : Physiol. Bot. p. 383.)

Experiments made up to date indicate but do not demonstrate a daily periodicity in the growth of the potato tuber. If such is the case two explanations would at once suggest themselves. Since the apparent maximum of growth in this organ lies between 10 P. M. and 8 A. M. it might be compared with aerial shoots and the rhythm be considered a hereditary trait, as the embryonic positive-heliotropic curvature of ivy shoots. More reasonable, however, would be the other explanation, co-ordinating the daily rhythm of the tuber with the rhythmic production of starch in the assimilating surfaces.

A more extended series of experiments along this line is being conducted by Mr. C. P. Lommen and he will doubtless be able to speak more fully upon the matter later on. This note merely calls attention to the method of study.—CONWAY MACMILLAN, *University of Minnesota.*

A monstrous form of a common field daisy.—The plant which I am about to describe was received from Virginia where it was found